US Army Medical Research and Materiel

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Compositions Having Anti-leishmanial Activity

This invention provides a composition comprising chloralin (4-chloro-3,6-dinitrobenzotrifluoride) and related compounds, and a method for using them to treat infections caused by organisms that have microtubules. These organisms include the *Leishmania*, *Giardia*, *Plasmodium*, and *Trypanosoma* genera of parasites. When drugs interact with the major microtubule protein, tubulin, mitosis is disrupted in these parasites.

Leishmaniasis is a disease that presents a major public health problem worldwide, with approximately 12 million to 40 million persons estimated to be infected. The current treatment methods require hospitalization and intravenous administration of drugs which can produce severe adverse side effects. Thus, alternative treatments are needed.

The compounds were dissolved in dimethyl sulfoxide and then diluted 100-fold in parasitic culture medium, before being tested against *...ania* species. Chloralin and three other compounds were found to much more effective at inhibiting *Leishmania* species than trifluralin, a ...tubule inhibiting herbicide. As trifluralin ... other dinitroaniline herbicides are considered possible carcinogens by some, the invention provides needed, potentially useful alternative drugs against a significant human disease.

Features and advantages:

- **Could potentially be used to treat humans infected with *Leishmania* parasites**
- **Could potentially be effective against other parasites that have microtubules**
- **Could potentially be administered parenterally, orally, topically, or transdermally**

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